

Order Anacanthini

Rostral and orbital portion of cranium longer than hind part. Cranial cavity wide in front. Mouth terminal or inferior, more or less protractile. Teeth in jaws in bands or uniserial. Vomer, palatines and pterygoids with or without teeth. Gill openings wide, membranes usually free from isthmus. Gills 4, pectinate, with 4 gill slits. No pseudobranchiae. Lower pharyngeals separate. Supraoccipital well developed, horizontal and keel like behind, separates parietals. Skeleton ossified. Pectoral arch suspended from skull, symphysis only loosely joined by ligament. Vertebrae progressively smaller posteriorly. Air bladder, if present, without pneumatic duct. Body scaly, scales cycloid or ctenoid. Fins spineless, except first two dorsal rays of some Coryphaenoididae. Vertical fins very long. Caudal homocercal or absent, when present without expanded hypural, symmetrical and supported by neural and haemal spines of hind vertebrae and by basal bones similar to those supporting dorsal and anal rays. Ventrals below or before pectorals, rays 1 to 9.

A large group of marine fishes, the shore forms living mostly in the cold waters of northern seas.

Analysis of Families

a¹. Caudal fin present; ventrals jugular.

b¹. Caudal united with long anal; small short dorsal fin
close behind pectoral bases. -----

----- Ateleopodidae.

b². Caudal free from dorsal and anal, dorsal extended
along back, often divided in 2 or 3 sections.

c¹. Chin with barbel, rarely obsolete; frontal bones
without triangular excavated area above. -----

----- Gadidae.

c². No barbels; frontal bones paired, with triangular
excavated above, divergent frontal crests
continuous from forked occipital crest. -----

----- Merlucciidae.

a¹. Caudal absent, dorsal and anal united at end of strongly
tapering tail; ventrals below or somewhat behind
pectoral origin. ----- Coryphaenoididae.

Family Ateleopodidae

Body elongate, with short trunk and long, compressed, tapering tail. Head rather large, with muciferous cavities. Eye with very small pupil. Mouth small, inferior or subterminal, protractile. Teeth small, villiform, in bands in upper or both jaws, none on palate. Nostrils 2, just before eye. Erectile spine sometimes immediately behind eye. Gill opening wide, membranes united and narrowly joined to isthmus, with narrow free border. Gills 4, with short flat gill filaments, slit behind fourth gill arch. Gill rakers 7 to 10 short spinescent tubercles. No pseudobranchiae. Branchiostegals 6 to 9. Skeleton largely cartilaginous. No air bladder. Skin tender, more or less gelatinous, scaleless or partly covered with nonimbricate, extremely thin, variable scales. Lateral line present, inconspicuous, pores widely separated. Short spineless dorsal, rather close behind pectoral fin bases. Anal long, continuous with caudal, which homocercal. Pectoral well developed, lateral. Ventral jugular, reduced to stout filament or stiff flexible rod, simple or bifid at end and composed of 2 many jointed components of one ray which remains distinct and may separate from each other terminally.

Analysis of genera

- a¹. Dorsal rays 8 to 10; mouth moderate.-----Ateleopus.
a². Dorsal rays 3; mouth small. ----- Parateleopus.

Genus Ateleopus Schlegel

Ateleopus SCHLEGEL, Fauna Japonica, Poiss., pts. 10-15, p. 255,

1846. (Atypic. Type Ateleopus japonicus BLEEKER, 1854, affixed.)

(Atelopus DUMÉRIL and BIBRON in herpetology not involved.)

Ateleopus BLEEKER, Verh. Batavia. Genoot. (Nalez. Jap.), vol.

25, p. 19, 1854 (Type Ateleopus japonicus BLEEKER, Monotypic.)

Podateles BOULENGER, Zool. Record, vol. 39, Pisces, p. 23, 1902.

(Type Ateleopus japonicus BLEEKER, virtually. Podateles

BOULENGER proposed to replace Ateleopus SCHLEGEL.)

Ijimaia SAUTER, Annot. Zool. Japon., vol. 5, art. 4, p. 235,

1905. (Type, Ijimaia doefleini SAUTER, monotypic.)

Body and tail compressed, latter well elongated, band like.

Head oblong, long as trunk. Snout rather long and broad, overlaps mouth.

Eye moderate, with small horizontal pupil. Maxillary protractile downward.

Teeth villiform, in narrow bands. Bones of head and body soft,

semicartilaginous, those of snout enclosed in thick mucigerous skin. Skin

scaleless. Dorsal rays 8 to 10.

Ateleopus doefleini (Sauter)

Ijimaia doefleini SAUTER, Annot. Zool. Japon., vol. 5, art.

4, p. 235, fig. 1905 (type locality: --JORDAN, TANAKA, SNYDER,

Journ. College Sci. Tokyo, vol. 33, art. 1, p. 57, 1913

(reference).

Ateleopus indicus Alcock

Ateleopus indicus ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol.

8, p. 123, fig. 3, 1891 (type locality: lat. $11^{\circ} 31' 40''$ N.,

long. $92^{\circ} 46' 40''$ E., Andaman Sea, 188 to 220 fathoms);

Illustrat. Zool. Investigator, pt. 1, pl. 2, fig. 2, 1892.

--GOODE and BEAN, Oceanic Ichth., p. 349, 1895 (reference).

--ALCOCK, Cat. Deep Sea Fishes Ind. Mus., p. 123, 1899

(Andaman Sea; Arabian Sea; 224 to 284 fathoms).

Ateleopus japonicus Bleeker

Ateleopus japonicus BLEEKER, Verhand. Batavia. Genoot. (Nalez.

Jap.), vol. 25, p. 19, 1854 (on SCHLEGEL). --GÜNTHER, Cat.

Fishes Brit. Mus., vol. 4, p. 398, 1862 (copied); Rep. Voy.

Challenger, vol. 22, p. 159, pl. 50, fig. A, 1887 (Tokio

Museum). --GOODE and BEAN, Oceanic Ichth., p. 349, fig., 1895

(reference). --JORDAN, TANAKA, SNYDER, Journ. College Sci.

Tokyo, vol. 33, art. 1, p. 57, 1913 (compiled). --JORDAN and

RICHARDSON, Mem. Carnegie Mus., vol. 6, no. 4, p. 299, pl.

37, fig. 1, Sep. 1914 (Sagami Bay). --TANAKA, Journ. Fac. Sci.

Un. Tokyo, Zool., vol. 3, pt. 1, Nov. 4, 1931, p. 18 (compiled).

Ateleopus SCHLEGEL, Fauna Japonica, Poiss., pt. 10-15, p. 255, pl.

112, fig. 1, 1846 (type locality: entrance to great bay in

district of Oomura).

Ateleopus purpureus TANAKA, Zool. Mag. Tokyo, vol. 27, no. 325,
p. 565, Nov. 15, 1915 (type locality: near Mito, Province
Hitach); Figs. Descr. Fishes Japan, vol. 22, p. 396, pl. 107,
fig. 328, April 25, 1916 (type).

Ateleopus tanabensis TANAKA,

Ateleopus natalensis = japanicus Regan

Ateleopus natalensis REGAN, Ann. Mag. Nat. Hist., ser. 9, vol. 7,
May 1921, p. 414 (type locality: 15 to 22 miles off the Umvoti
River, Natal). --GILCRIST, Fisher. Mar. Biol. Surv. South Africa,
Spec. Rep. no. 2, p. 77, 1922 (Natal, 157 to 168 fathoms). --
BARNARD, Ann. South African Mus., vol. 21, pt. 1, p. 251, pl. 10,
fig. 3, June 1925 (off Natal, 120 to 168 fathoms).

Ijiniiaia plicatellus (Gilbert)

Ateleopus plicatellur GILBERT, Bull. U. S. Fish Comm., vol.

23, pt. 2, p. 653, fig. 253, 1903 (1905) (type locality:

Pailolo Channel; off south coast of Oahu; 257 to 684 fathoms).

--FOWLER, Mem. Bishop Mus., vol. 10, p. 71, 1928 (type).

Genus Parateleopus Smith and Radcliffe

Parateleopus SMITH and RADCLIFFE, Proc. U. S. Nat. Mus., vol.

43, p. 139, 1912. (Type Parateleopus microstomus SMITH and

RADCLIFFE, orthotypic.)

Body and tail compressed, tapering. Head long as trunk. Snout fleshy, pointed, protrudes beyond mouth. Mouth small, semicircular, horizontal. Lips fleshy. Upper jaw with band of small teeth, lower and palate toothless. No strong bony protuberance above and behind eye. Gill rakers few. No pseudobranchiae. No scales. Lateral line inconspicuous, pores wide set. Dorsal rays 3.

Parateleopus microstomus Smith and Radcliffe

Parateleopus microstomus SMITH and RADCLIFFE, Proc. U. S. Nat.

Mus., vol. 43, p. 140, fig. 11, 1912 (type locality: near

Makyan Island, Dutch East Indies, 275 fathoms). --WEBER and

BEAUFORT, Fishes Indo Austral. Archip, vol. 5, p. 3, fig. 1, 1929
(copied)

Family Gadidae

Body more or less elongate, tail moderate, coniform behind. Head large, bones mostly firm or cavernous by muciferous sensory cavities. Mouth large, terminal, more or less protractile. Mandibular barbel usually present. Teeth strong, small or villiform, in bands or uniserial in jaws. Vomer, palatines or pterygoids with or without teeth. Preopercle edge usually covered by skin of head. Suborbitals moderate. Gill openings wide, membranes separated or but slightly united, usually free from isthmus. Gills 4, slit behind fourth. Pseudobranchiae glandular or absent. Branchiostegals 7. Air bladder usually well developed. Pyloric coeca numerous, sometimes few or none. Scales small, cycloid. No spines, fin rays all articulated. Dorsal extending along back, may form 1, 2 or 3 fins. Anal long, single or divided. Caudal distinct or confluent with dorsal and anal, symmetrical, homocercal, supported by neural and haemal spines of hind vertebrae and by basal bones like those supporting preceding dorsal and anal rays; rays of caudal above and below procurrent. Pectoral pterygials 4, Ventrals jugular, joined to pubic bone, with 2 to 9 branched rays.

Fishes chiefly of polar and temperate seas, mostly marine, some living in oceanic abysses. Many are important food fishes.

Genus Algoa Castelnau

Algoa CASTELNAU, Mém. Poiss. Afrique australe, p. 69, 1861.

(Type Algoa viridis CASTELNAU, monotypic.)

Body ovoid. No mandibular barbel. Teeth very strong, curved, well spaced, in several series. Teeth on palate. Single dorsal fin, well separated from caudal. Caudal forked. Ventrals with several rays.

A doubtful genus.

Algoa viridis Castelnau

Algoa viridis CASTELNAU, Mém. Poiss. Afrique australe, p. 69,

1861 (type locality: estuary of Zwartkops River, Algoa Bay).

--BARNARD, Ann. South African Mus., vol. 21, pt. 1, p. 319,

June 1925 (copied).

Analysis of Genera

a¹. Gadinae. Dorsals 3.

b¹. Anal divided into 2 separate fins.

c¹. Lower jaw distinctly projecting; barbel small or obsolete; caudal concave behind.

d¹. Upper teeth slender, wide, uniserial or biserial; caudal forked. ----- Boreogadus.

d². Upper teeth in villiform band, outer somewhat larger; caudal lunate.

e¹. Subopercle and postclavicle normal, both thin and flat, not enlarged and ivory-like.-----

----- Pollachius.

Add Arctogadus

Drjagin, Zool. Anz., vol.

98, p. 151, 1932 (type

a. borisovi n. sp.).

(Boreogadus parryi Nichols & Maxwell,
Copeia, 1933, p. 26, probably = Arctogadus
borisovi).

Sam.

e². Subopercle and postclavicle normal, bone dense
and smooth, like ivory.-----Theragra.

c². Lower jaw included; barbel well developed; caudal
not concave behind.

f¹. Transverse extensions of vertebrae thickened,
swollen and ivory-like at tip; size small-----
-----Eleginus.

f². Transverse extensions of vertebrae not
swollen at tip; size large.-----Gadus.

b². Anal continuous single fin.-----Triptterophycis.

a². Anal forming continuous fin or sometimes only deeply
notched; dorsal usually divided into but 2 fins.

g¹. Dorsal fins 2.

h¹. First dorsal with distinct rays, like those
those of second dorsal.

i¹. Ventral rather broad, rays 6.

j¹. Morinae. Anal single, but with deep
notch; mouth inferior or
subinferior.

k¹. Snout little depressed or project-
ing; edge without keel; tail
slender.

l¹. Ventral rays 5 to 8, subequal,
short.

m¹. Anal in 2 distinct parts; teeth
cardiform, in band above ----
-----Mora.

m². Anal continuous, more or less
deeply notched.

n¹. Snout obtuse; teeth on vomer;
barbel present.----Lepidion.

n². Snout obtusely conic; no teeth
on vomer; no barbel-----
-----Halargyreus.

l². Ventral rays 1 to 3, elongate, with
or without additional short
rays.

o¹. Scales moderate; jaws even;
pectoral not reaching dorsal
or anal.-----Bregmaceros.

o². Scales very small; mandible
protruding; pectoral
reaches well in first dorsal
and front of anal.-----
-----Auchenoceros.

k². Snout flat, depressed, projecting
over mouth, keeled on edge; tail
attenuate.

p¹. Jaw teeth unequal outer
row of strong teeth
followed by narrow band
of smaller ones.-----

----- Lotella.

p². Jaw teeth villiform, in
single broad band.-----

----- Physiculus.

p³. Jaw teeth in premaxillary
biserial, series divid-
ed by groove.-----

----- Austrophycis.

i². Phycinae. Ventral rays very slender;
first dorsal with 5 rays.

q¹. Ventral a single bifid
ray.----- Laemonema.

q². Ventral rays 8, outer 2
very long and united
great part their
length.----- Laemonemoides.

b². Gaidropsarinae. First dorsal single slender ray and
band of fringes; second dorsal and anal distinct;
teeth in band in jaws and on vomer; several barbels
on muzzle.----- Gaidropsarus.

Genus Boreogadus Günther

Boreogadus GÜNTHER, Cat. Fishes Brit. Mus., vol. 4, p. 336,

1862. (Type Gadus fabricii RICHARDSON, designated by JORDAN

and GILBERT, Bull. U. S. Nat. Mus., no. 16, p. 807, 1882.)

Body elongate, slender, little compressed. Caudal peduncle slender, rounded. Head long, pointed. Lower jaw projects. Upper teeth slender, wide set, uniserial or biserial. Gill rakers numerous, long, slender. Dorsal fins 3. Anal divided as 2 fins. Caudal forked.

Small codfishes of the Arctic Seas. They differ from Pollachius and Theragra chiefly in their dentition and forked caudal.

Boreogadus saida (Lepechin)

Gadus saida LEPECHIN, Nov. Comment. Acad. Sci. Petropol., vol.

18, p. 512, 1774 (type locality: Russia). --BONNATERRE, Tabl.

Ichth., p. 47, pl. 86, fig. 360, 1788 (White Sea). --GMELIN,

Syst. Nat. Linn., pt. 1, p. 1166, 1789 (copied). --WALBAUM,

Artedi Pisc., vol. 3, p. 134, 1792 (copied). --LACÉPÈDE, Hist.

Nat. Poiss., vol. 2, pp. 366, 405, 1800 (copied). --SCHNEIDER,

Syst. Ichth. Bloch, p. , 1801 (copied). --GÜNTHER, Cat. Fishes

Brit. Mus., vol. 4, p. 337, 1862 (compiled).

Boreogadus saida

--JORDAN and EVERMANN, Bull. U. S. Nat. Mus., no. 47, pt. 3, p. 2533, 1898 (compiled). --JORDAN and STARKS, Bull. U. S. Fish Comm., vol. 22, p. 601, 1902 (1904) (Matsushima Bay, Japan). --FOWLER, Proc. Acad. Nat. Sci. Philadelphia, p. 370, 1905 (Point Barrow, Alaska). --EVERMANN and GOLDSBOROUGH, Bull. Bur. Fisher., vol. 26, p. 346, fig. 126, 1906 (1907) (Alaska records). --JORDAN, EVERMANN, CLARK, Rep. U. S. Comm. Fisher., pt. 2, p. 209, 1930 (compiled).

Merlangus polaris SABINE, Suppl. Parry's Voy., p. 211, 1824

(type locality: Baffin Bay).

Gadus fabricii RICHARDSON, Fauna Bor. Amer., vol. 3, p. 245,

1836 (type locality: northern bays of Greenland). --GÜNTHER,

Cat. Fishes Brit. Mus., vol. 4, p. 336, 1862 (Baffin Bay;

Beechey Island).

Gadus agilis REINHARDT, Dansk. Vidensk. Selsk. Afhandl.

Kjöbenhavn, vol. 7, p. 126, 1838 (type locality: Greenland).

Gadus glacialis PETERS, Nord Pol. Exped., vol. 2, p. 172, 1874.

Genus Pollachius Milsson

Pollachius NILSSON, in BONAPARTE, Cat. Metod. Pesc. Eur., p.

45, 1846. (Type Pollachius typus BONAPARTE — Gadus virens

LINNAEUS.)

Body rather elongate. Snout conic. Mandibular barbel very small or obsolete. Mouth moderate or large, lower jaw projecting. Maxillary reaches beyond front of eye. Teeth in jaws equal, or outer row slightly enlarged. Villiform teeth on vomer, none on palatines. Gill membranes more or less united. Subopercle and postclavicle not enlarged, nor ivory like. Vertebrae 55, of which 32 caudal. Scales minute. Dorsal 3. Anals 2. Caudal lunate. Ventrals short. Vent below first dorsal.

Species few, of large size and living in Arctic or subarctic seas.

Pollachius brandti (Hilgendorf)

Gadus brandti HILGENDORF, Mitt., Deutsch. Gesell. Nat. Volker.

Ostasiens, vol. 1, pt. 7, p. 39, 1875 (type locality: southern Japan).

Pollachius brandti JORDAN and SNYDER, Annotat. Zool. Japon.,
vol. 3, p. 118, 1901 (reference). --JORDAN, TANAKA, SNYDER,
Journ. College Sci. Tokyo, vol. 33, art. 1, p. 407, 1913
(compiled).

Pollachius minor (Steindachner and Döderlein)

Gadus minor STEINDACHNER and DODERLEIN, Denks. Akad. Wiss. Wien,
math.-nat. Kl., vol. , pt. , p. 277, 1887 (type locality:
Tokyo).

Pollachius minor JORDAN and SNYDER, Annotat. Zool. Japon., vol.
3, p. 118, 1901 (reference). --JORDAN, TANAKA, SNYDER, Journ.
College Sci., Tokyo, vol. 33, art. 1, p. 407, 1913 (compiled).

Genus Theragra Lucas

Theragra LUCAS, in JORDAN and GILBERT, Rep. Fur Seale Investig.,
pt. 3, p. 486, 1896 (1898). (Type Gadus chalcogrammus PALLAS,
monotypic.)

Subopercle and postclavicle thick, smooth, dense, like ivory,
Vertebrae 52, of which 33 caudal.

Closely related to Pollachius, differing chiefly in ivory like
structure of the subopercle and postclavicle bones. Two species in the
North Pacific.

Theragra chalcogramma (Pallas)

Gadus chalcogrammus PALLAS, Zoogr. Ross. Asiat., vol. 3, p.

198, 1811 (type locality: Ochotsk Sea; Kamchatka).

Theragra chalcogramma EVERMANN and GOLDSBOROUGH, Bull. Bur.

Fisher., vol. 26, p. 346, fig. 127, 1906 (1907) (Cleveland

Passage, Skagway, Karluk, Shakan, Sand Point, Fox Harbor,

Dundas Bay, Pavlof Harbor, Unalaska; Chignik Bay; Sitkoh Bay;

Loring; Link Bay; Kamchatka; St. Paul Island). --FRANZ, Abhandl.

Kon. Bayer. Akad. Wiss., vol. 4, Suppl. band 1, p. 30, 1910

(Yokohama). --JORDAN, TANAKA, SNYDER, Journ. College Sci.

Tokyo, vol. 33, art. 1, p. 406, 1913 (Bering Sea; Sitka; Kuriles;

Robben; Hokkaido; Toyama Bay). --JORDAN and HUBBS, Mem. Carnegie

Mus., vol. 10, no. 2, p. 326, June 27, 1925 (Noo).

Genus Eleginus Ficher

Eleginus FISCHER, Mém. Soc. Nat. Moscou, vol. 4, pt. 2, p. 252,

pl. 18, 1813. (Type Gadus navaga KOELREUTER, monotypic.)

Tilesia (not LAMOUROUX 1821) SWAINSON, Nat. Hist. Animals, vol.

2, p. 300, 1839. (Type Gadus gracilis TILESIIUS, monotypic.)

Pleurogadus T. H. BEAN, in JORDAN, Rep. U. S. Fish Comm., pt.

13, p. 918, 1885 (1887). (Type Gadus gracilis TILESIIUS, orthotypic.)

Body rather slender. Head moderate, long. Mandibular barbel small. Lower jaw included within upper. Subopercle and postclavicle enlarged, bone dense and smooth like ivory. Transverse projections of vertebrae club shaped, narrow at base, expanded terminally into rounded hollow bulb at tips. Scales very small. Dorsal fins 3. Anal divided as 2 fins.

Small cod fishes of the Arctic Seas.

Eleginus navaga (Koelreuter)

Gadus navaga KOELREUTER, Nov. Comm. Acad. Petropol., vol. 14,

p. 484, pl. 12, 1770 (type locality: coast of northern Russia).

--PALLAS, Zoogr. Ross. Asiat., vol. 3, p. 196, 1811 (Arctic seas;

Russio; Ob River mouth). --GÜNTHER, Cat. Fishes Brit. Mus., vol.

4, p. 330, 1862 (White Sea). --GILL, Proc. Acad. Nat. Sci.

Philadelphia, p. 251, 1863 (reference).

Eleginus navaga GILL, Proc. U. S. Nat. Mus., vol. , p. 303,

1890 (). --JORDAN and EVERMANN, Bull. U. S. Nat. Mus.,

no. 47, pt. 3, p. 2537, 1898 (Port Clarence; Petropaulski).

--EVERMANN and GOLDSBOROUGH, Bull. Bur. Fisher., vol. 26, p.

347, fig. 128, 1906 (1907) (Puget Sound; Alaska; Kamchatka).

--FRANZ, Abhandl. Kon. Bayer. Akad. Wiss., vol. 4, Suppl. band

1, p. 30, 1910 (Fukura). --SNYDER, Proc. U. S. Nat. Mus., vol.

42, p. 450. 1912 (Otaru). --JORDAN, TANAKA, SNYDER, Journ. College

Sci. Tokyo, vol. 33, art. 1, p. 407, 1913 (Arctic Ocean, Bering

Sea, Decastris Bay, Hokkaido).

Gadus gracilis TILESTUS, Mém. Acad. Sci. St. Pétersbourg, vol. 2,

p. 354, 1810 (type locality: Kamchatka). --GILL, Proc. Acad.

Nat. Sci. Philadelphia, p. 251, 1863 (compiled).

Gadus wachna PALLAS, Zoogr. Ross. Asiat., vol. 3, p. 182, pl. 44,

1811 (type locality: Kamchatka; America).

Genus Gadus Linnaeus

Gadus LINNAEUS, Syst. Nat., ed. 10, vol. 1, p. 251, 1758.

(Type Gadus callarias LINNAEUS, designated by JORDAN and GILBERT,

Bull. U. S. Nat. Mus., no. 16, p. 803, 1882.)

Morr OKEN, Isis, p. 1183, 1817 (on Les Morrues CUVIER,

Règne Animal, vol. 2, p. 212, 1817). (Type Gadus morrhua

LINNAEUS, designated by JORDAN and EVERMANN, Genera of Fishes,

pt. 1, p. 100, 1917.)

Cephus SWAINSON, Nat. Hist. Animals, vol. 2, p. 300, 1839.

(Type Gadus macrocephalus TILESIIUS, monotypic.)

Body moderately long, compressed, tapering behind. Head narrowed in front. Mouth moderate. Maxillary reaches past front of eye. Mandibular barbel present. Teeth in jaws partly equal, cardiform. Vomer with teeth, none on palatines. Cranium with expanded crests and no part of skeleton expanded or ivory like. Scales very small. Lateral line present. Dorsal 3, well separated. Anals 2. Ventrals well developed, rays 7.

Species few, of the northern seas and all highly valued as food fishes. The name cod in Middle English means a shell, husk or bolster.

Gadus macrocephalus Tilesius

Gadus macrocephalus TILESIIUS, Mém. Acad. Sci. St. Petersb.,

vol. 2, p. 360, 1810 (type locality: Bering Sea). --GÜNTHER,

Cat. Fishes Brit. Mus., vol. 4, p. 330, 1862 (compiled).

--GILL, Proc. Acad. Nat. Sci. Philadelphia, 1863, p. 251

(reference). --GARMAN, Mem. Mus. Comp. Zool., vol. 24, p. 393,

1899 (reference). --JORDAN and STARKS, Proc. U. S. Nat. Mus.,

vol. 31, p. 526, 1906 (Port Arthur, Manchuria). --JORDAN, TANAKA,

SNYDER, Journ. College. Sci. Tokyo, vol. 33, art. 1, p. 406,

1913 (Bering Sea; Kuriles; Robben Island; Kamchatka; Hokkaido;

Sagholin). --JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10,

no. 2, p. 326, June 27, 1925 (Osaka; Kushiro).

Gadus pygmaeus PALLAS, Zoogr. Ross. Asiat., vol. 3, p. 199, 1811

(type locality: Kamchatka).

Gadus auratus COPE, Proc. Amer. Philos. Soc., Philadelphia,

vol. 13, p. 30, 1873 (type locality: Alaska).

? Gadus pseudomorrhua BLEEKER, Nederland Tijds. Dierk., vol.
4, p. (130) 151, 1873 (1874) (type locality: China).

Genus Tripteroptychotis Boulenger

Tripteroptychotis BOULENGER, Ann. Mag. Nat. Hist., ser. 7, vol.

9, p. 335, 1902. (Type Tripteroptychotis gilchristi BOULENGER,
monotypic.)

Body elongate, tapering posteriorly. Snout short. Eye large.
Mouth rather small, lower jaw shorter than upper. Maxillary reaches middle
of eye. Mandibular barbel present. Teeth uniserial in both jaws, close set,
chisel shaped. No teeth on vomer and palatines. Gill rakers long and
slender. Branchiostegals 7. Scales small, cycloid. Dorsals three, first
small, second short and rather high, behind level of vent, third elongate
and low, far back. Anal single, elongate, nearly uniformly high. Caudal
small, obtusely pointed. Ventrals reduced, rays 5 and two outermost elongate
and filamentous. Vent premedian, well advanced.

Tripterophycis gilchristi Boulenger

Tripterophycis gilchristi BOULENGER, Ann. Mag. Nat. Hist.,

ser. 7, vol. 9, p. 335, fig., 1902 (type locality: some 40

miles off Table Mountain, South Africa, 250 fathoms); ser.

7, vol. 9, p. 168, pl. 12, 1903 (). --BRAUER,

Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 275 (394), fig.

171, 1906 (lat. 6° 54' N., long. 93° 28' 8", 296 meters).

--GILCHRIST, Fisher. Mar. Biol. Surv. South Africa, Rep.

no. 2, p. 64, 1922 (Natal coast, 165 to 324 fathoms). --

BARNARD, Ann. South African Mus., vol. 21, pt. 1, p. 329,

June 1924 (off Cape Point, 150 to 250 fathoms). --WEBER and

BEAUFORT, Fishes Indo Austral. Archip., vol. 5, p. 11, fig.

4, 1929 (copied).

Genus Mora Risso

Mora RISSO, Hist. Nat. Eur. Mérid., vol. 3, p. 224, 1826. (Type

Mora mediterranea RISSO Gadus mora RISSO, monotypic.)

Asellus (not ST. HILAIRE 1764) VALENCIENNES, Hist. Nat.

Canaries, vol. 2, pt. 2, p. 76, 1836-44 (Type Asellus

canariensis VALENCIENNES = Gadus mora Risso, monotypic.)

Body moderately long, tail tapering moderately. Head rather small. Snout convex. Eye large, advanced. Mouth large, subinferior, oblique, lower jaw included. Teeth cardiform, equal, in jaws, on vomer and palatines, those of upper jaw in bands. Mandibular barbel present. Gill openings large. Branchiostegals 7. Scales moderate, cover head and trunk. Dorsals separate, prominent, as short anterior fin and long posterior. Anal 2, widely separated. Caudal forked. Ventral rays 6.

Mora mora (Risso)

Gadus mora RISSO, Ichth. Nice, p. 116, 1810 (type locality: Nice).

Mora mora GARMAN, Mem. Mus. Comp. Zool., vol. 24, p. 393, 1899

(reference). --BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol.

15, p. 393, 1906 (reference). --MURRAY and HJORT, Depths of the

Ocean, p. 400, fig. 278 (copied) (off southern England; Morocco;

Canaries; 923 to 1365 meters).

Mora mediterranea RISSO, Hist. Nat. Eur. Mérid., vol. 3, p.

224, 1826 (type locality: Nice). --BONAPARTE, Fauna Italica,

Pesci. pt. 1, fasc. 23, no pagination, pl., fig. 1,

(Italy). --LOWE, Proc. Zool. Soc. London, vol. 11, p. 91,

1843 (off Magdalena, 15 leagues west of Funchal, 300 to 400

fathoms). --GÜNTHER, Cat. Fishes Brit. Mus., vol. 4, p. 341,

1862 (Mediterranean; Madeira). --STEINDACHNER, Sitzs. Ber.

Akad. Wiss. Wien, Math.-nat. Kl., vol. 57, p. 2, p. 707, 1868

(Canaries). --CANESTRINI, Fauna Italia, Pesc., p. 155, 1875.

--ROCHEBRUNE, Faune Senegambia, Poiss., p. 114, 1883-85 (Cape

Blanco; Portendik; Guet N'Dar; Argain). --VAILLANT, Exped. Sci.

Travailleur et Talisman, Poiss., p. 298, pl. 25, figs. 6-a,

1888 (off Canaries; Morocco; 622 to 1180 meters). --GOODE and

BEAN, Oceanic Ichth., pp. 369, 531, pl. 92, fig. 322, 1895 (compiled).

Asellus canariensis VALENCIENNES, Hist. Nat. Canaries, vol. 2, pt.

2, p. 76, pl. 14, fig. 3, 1836-44 (type locality: Canary Islands).

Pharopteryx benoit RÜPPELL, Verzeich. Mus. Senckenberg., Fische,

p. 16, 1852.

Mora pacifica Waite

Mora pacifica WAITE, Trans. New Zealand Inst., vol. 46, p.

128, pl. 5, 1913 (June 15, 1914) (type locality: Kaikoura).

Genus Lepidion Swainson

Lepidion SWAINSON, Nat. Hist. Animals, vol. 2, p. 300, 1839.

(Type Lepidion rubescens SWAINSON = Gadus lepidion RISSO,

tautotypic.) (Lepidia SAVIGNY 1817 not involved.)

Haloporphyrus GÜNTHER, Cat. Fishes Brit. Mus., vol. 4, p. 358,

1862. (Type Gadus lepidion RISSO, monotypic.)

Salilota GÜNTHER, Rep. Voy. Challenger, vol. 22, p. 95, 1887.

(Type Haloporphyrus australis GÜNTHER, monotypic.)

Body oblong, elongate. Head thick, rather compressed. Snout short, bluntly conic. Mouth moderate, lower jaw shorter than upper. Maxillary reaches below eye. Teeth villiform, of equal size in jaws and slender, present on vomer, none on palatines. Mandibular barbel present. Gill rakers slender. Branchiostegals 7. Abdominal cavity extends far behind vent. Pyloric coeca very long, 10 to 17. Scales small, cycloid. Two dorsals, first fin with 4 to 9 rays. Hind rays of second dorsal and anal highest. One anal fin. Caudal rounded or subtruncate, separate from dorsal or anal. Ventrals with narrow or wide base, rays 6 to 8.

Deep sea fishes of the North and South Atlantic, Mediterranean
and Pacific.

Lepidion capense Gilchrist

Lepidion capense GILCHRIST, Fisher. Mar. Biol. Surv. South

Africa, Rep. no. 2, p. 61, 1922 (type locality: Natal coast,
312 to 417 fathoms). --BARNARD, Ann. South African Mus., vol.
21, pt. 1, p. 324, pl. 13, fig. 1, June 1925 (off Table Bay;
Cape Point; East London; 250 to 630 fathoms).

Lepidion Guntheri (Giglioli)

Haloporphyrus guntheri GIGLIOLI, Nature, vol. 21, p. 202, Jan.

1, 1880 (on GUNTHER 1862) Ann. Mus. Civ. Stor. Nat. Genova,
vol. 18, p. 558.

Haloporphyrus guentheri GUNTHER, Rep. Voy. Challenger, vol. 22,

p. 90, pl. 18, fig. A, 1887 (Madeira).

Haloporphyrus g untheri VAILLIANT, R es. Camp. Sci. Monaco, vol. 52,

p. 134, 1919 (lat. 38  26' N., long. 26  30' 45" W., 1165 meters).

Lepidion g untheri BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol.

15, p. 394, 1906 (reference).

Haloporphyrus lepidion (not RISSO) GÜNTHER, Cat. Fishes Brit.

Mus., vol. 4, p. 358, 1862 (type locality: Madeira) --JOHNSON,

Ann. Mag. Nat. Hist., vol. 10, p. 166, 1862 (Madeira).

Lepidion eques (Günther)

Haloporphyrus eques GÜNTHER, Rep. Voy. Challenger, vol. 22, p.

91, pl. 18, fig. B, 1887 (type locality: Faroe Channel, 530

fathoms).

Lepidion eques GARMAN, Mem. Mus. Comp. Zool., vol. 24, p. 393,

1899 (reference). --BRAUER, Deutsch. Tiefsee Exped. Valdivia,

vol. 15, p. 394, 1906 (reference). --MURRAY and HJORT, Depths

of the Ocean, p. 400, fig. 280 (copied), 1912 (Faroe-Channel;

Faroe Bank; 750 meters).

Lepidion ensiferum (Günther)

Haloporphyrus ensiferus GÜNTHER, Rep. Voy. Challenger, vol. 22,

p. 92, pl. 19, fig. A, 1887 (type locality: mouth of Rio Plata,

600 fathoms).

Lepidion ensiferus GARMAN, Mem. Mus. Comp. Zool., vol. 24,

p. 393, 1899 (reference). --BRAUER, Deutsch. Tiefsee Exped.

Valdivia, vol. 15, p. 394, 1906 (reference).

Lepidion inosimae (Günther)

Halaporphyrus inosimae GÜNTHER, Rep. Voy. Challenger, vol. 22,

p. 92, pl. 20, fig. b (type locality: Inosima, Japan, 345

fathoms). --FRANZ, Abhandl. Kon. Bayer. Akad. Wiss., vol. 4,

Suppl. band 1, p. 29, 1910 (Aburatsubo).

Lepidion inosimae GOODE and BEAN, Oceanic Ichth., p. 531, 1895

(copied). --GARMAN, Mem. Mus. Comp. Zool., vol. 24, p. 393,

1899 (reference). --BRAUER, Deutsch. Tiefsee Exped. Valdivia,

vol. 15, p. 394, 1906 (reference) . --JORDAN, TANAKA, SNYDER,

Journ. College Sci. Tokyo, vol. 33, art. 1, p. 408, 1913 (copied).

Lepidion lepidion (Risso)

Gadus lepidion RISSO, Ichth. Nice, p. 118, pl. 11, fig. 40,

1810 (type locality: Nice).

Haloporphyrus lepidion GIGLIOLI, Nature, 21, p. 202, Jan. 1, 1880

(Gulf of Genoa, 900 meters; Nice); Ann. Mus. Civ. Stor. Nat. Genova,
vol. 18, p. 554, pl. 3, --GÜNTHER, Rep. Voy. Challenger, vol. 22,
p. 91, 1887 (Nice).

Lepidion lepidion GARMAN, Mem. Mus. Comp. Zool., vol. 24, p. 393,

1899 (reference). --BRAUER, Deutsch. Tiefsee Exped. Valdivia,
vol. 15, p. 394 (reference).

Lepidion modestum (Franz)

Haloporphyrus modestus FRANZ, Abhandl. Kon. Bayer. Akad. Wiss.,

vol. 4, Suppl. band 1, p. 28, pl. 4, fig. 13, 1910 (type
locality: Yokohama).

Lepidion modestus JORDAN, TANAKA, SNYDER, Journ. College Sci. Tokyo,

vol. 33, art. 1, p. 408, 1913 (compiled).

Lepidion natalensis Gilchrist

Lepidion natalensis GILCHRIST, Fisher. Mar. Biol. Surv. South Africa,

Rep. no. 2, p. 62, 1922 (type locality: Natal coast, 324 fathoms).

--BARNARD, Ann. South African Mus., vol. 21, pt. 1, p. 324, June
1925 (types).

Lepidion oidema (Tanaka)

Haloporphyrus oidema TANAKA, Fig. Descript. Fishes Jap.,

vol. 41, p. 796, pl. 171, fig. 472, Dec. 23, 1927 (type

locality: off Misaki, Province of Sagami, 510 fathoms).

Lepidion verecundum Jordan and Cramer

Lepidion verecundum JORDAN and CRAMER, Proc. U. S. Nat. Mus.,

vol. 19, p. 456, 1896 (type locality: near Clarion Island,

Revillagigedo Group, Mexico, 364 fathoms). --JORDAN and

EVERMANN, Bull. U. S. Nat. Mus., no. 47, pt. 3, p. 2543,

1898 (type).

Genus Halargyreus Günther

Halargyreus GÜNTHER, Cat. Fishes Brit. Mus., vol. 4, p. 342,

1862. (Type Halargyreus johnsonii GÜNTHER, monotypic.)

Body elongate. Head rather long, compressed. Snout obtusely conic. Mouth cleft wide, jaws equal in front. Maxillary reaches below hind part of eye. Teeth minutely villiform, in bands in jaws, none on palate. Pseudobranchiae glandular, rudimentary, covered by membrane. Branchiostegals 7. Scales small. Dorsals 2. Anals 2, subcontinuous. Caudal separate. Ventral rays several.

Halargyreus affinis Collett

Halargyreus affinis COLLETT, Forh. Vet. Selsk. Christiania,

1904, no. 9, p. 6 (type locality: Faroe Bank, 750 to 1200

meters). --BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol.

15, p. 394, 1906 (reference). --MURRAY and HJORT, Depths of

the Ocean, p. 401, fig. 281 (copied), 1912 (Faroe Bank,

750 meters).

Halargyreus brevipes Vaillant

Halargyreus brevipes VAILLANT, Expéd. Sci. Travailleur et

Talisman, Poiss., p. 295, pl. 25, fig. 5, 1888 (type locality:

off Morocco, 1319 meters). --GOODE and BEAN, Oceanic Ichth.,

p. 375, pl. 93, fig. 325, 1895 (compiled). --GARMAN, Mem. Mus.

Comp. Zool., vol. 24, p. 393, 1899 (reference). --BRAUER,

Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 394, 1906

(reference).

Halargyreus johnsonii Günther

Halargyreus johnsonii GÜNTHER, Cat. Fishes Brit. Mus., vol.

4, p. 342, 1862 (type locality: Madeira; from stomach of

Saccopharynx). --HUTTON, Fishes of New Zealand, p. 45, 1872

(Cook Straits). --GÜNTHER, Rep. Voy. Challenger, vol. 1, pt.

4, p. 26, 1880 (New Zealand); vol. 22, p. 83, 1887 (copied).

--GOODE and BEAN, Oceanic Ichth., pp. 376, 531, 1895 (compiled). --

BRAUER, Deutsch. Tiefsee - Exped. Valdivia, vol. 15, p. 394,

1906 (reference). --WAITE, Rec. Canterbury Mus., vol. 1, p. 18,

April 25, 1907 (reference).

Halargyreus johnsonii GARMAN, Mem. Mus. Comp. Zool., vol. 24,

p. 393, 1899 (reference). --BRAUER, Deutsch. Tiefsee Exped.

Valdivia, vol. 15, p. 394, 1906 (reference).

Genus Bregmaceros Cantor

Bregmaceros CANTOR, in THOMPSON, London Mag. Nat. Hist.

Charlesworth, new ser., vol. 4, p. 184, April 1840. (Type

Bregmaceros maclellandii CANTOR, monotypic.)

Calloptilum RICHARDSON, Zool. Voy. Sulphur, Ichth., p. 94,

1844. (Type Calloptilum mirum RICHARDSON, monotypic.)

Asthenurus TICKELL, Journ. Asiatic Soc. Bengal, vol. 34, p.

32, 1865. (Type Asthenurus atripinnis TICKELL, monotypic.)

Body moderately long, fusiform, compressed posteriorly. Head small, somewhat compressed. Snout short. Eyes lateral. Mouth small oblique, terminal, jaws subequal. Teeth movable, minute, in jaws and on vomer, none on palatines. Gill openings very wide, membranes united below throat, not joined to interorbital. No pseudobranchiae. Branchiostegals 7. Air bladder large. Two wide pyloric coeca. Scales cycloid, deciduous, moderate. No lateral line. Fins without spines. Two dorsals; first of single long occipital ray; second long, begins opposite anus at about end of first third in body length, formed of, front and hind elevated portion connected by series of low short detached spines. With age both dorsal and anal more depressed medially or middle ray obsolete. Anal similar. Caudal more or less emarginate, well separated from vertical fins. Pectorals small, midway in body height. Ventrals jugular, their origins apposed, of 5 rays with outer extremely elongate.

Small tropical coast fishes, also living in the open sea, from the surface to 500 meters depth.

Bregmaceros atlanticus Goode and Bean

Bregmaceros atlanticus GOODE and BEAN, Bull. Mus. Comp. Zool.,

vol. 12, no. 5, p. 165, 1886 (type locality: off Grenada; off

Neris; lat. $25^{\circ} 33'$ N., long. $84^{\circ} 21'$ W.; 90 to 305 fathoms);

Oceanic Ichth., p. 388, pl. 95, fig. 331, 1895 (above materials).

--JORDAN and EVERMANN, Bull. U. S. Nat. Mus., no. 47, pt. 3,

p. 2527, 1898 (compiled). --GARMAN, Mem. Mus. Comp. Zool., vol.

24, p. 394, 1899 (reference). --JORDAN, EVERMANN, CLARK, Rep

U. S. ^{Comm.} Fisher. pt. 2, p. 208, 1930 (reference).

Bregmaceros bathymaster Jordan and Bollman

Bregmaceros bathymaster JORDAN and BOLLMAN, Proc. U. S. Nat. Mus.,

vol. 12, p. 173, 1889 (1890) (type locality: lat. $8^{\circ} 16'$ N.,

long. $16^{\circ} 30''$ W., Pacific coast South America). --JORDAN,

^{Comm.}
EVERMANN, CLARK, Rep. U. S. /Fisher., pt. 2, p. 208, 1930

(compiled).

Bregmaceros macclellandii (not CANTOR) JORDAN and EVERMANN, Bull.

U. S. Nat. Mus., no. 47, pt. 3, p. 2526, 1898 (types of

Bregmaceros bathymaster).

Bregmaceros longipes Garman

Bregmaceros longipes GARMAN, Mem. Mus. Comp. Zool., vol. 24,

p. 191 (394), pl. 43, figs. 6-9, 1899 (type locality: lat.

16° 47' 30" N., long. 99° 59' 20" W., off Acapulco, 94 fathoms).

--JORDAN, EVERMANN, CLARK, Rep. U. S. Comm. Fisher., pt. 2,

p. 208, 1930 (reference).

Bregmaceros maclellandii Cantor

Bregmaceros maclellandii CANTOR, in THOMPSON, Ann. Mag. Nat.

Hist., Charlesworth, vol. 4, p. 184, fig., 1840 (Type locality:

Brachish water of Gangetic Delta). --FOWLER, Mem. Bishop Mus.,

vol. 10, p. 87, 1928 (compiled). --MC CULLOCH, Austral. Mus.

Mem., no. 5, pt. 1, p. 130, June 29, 1929 (north and north

west Australia).

Bregmaceros maclellandii GÜNTHER, Cat. Fishes Brit. Mus.,

vol. 4, p. 368, 1862 (China Sea); Rep. Voy. Challenger, vol.

31, pt. 2, p. 25, pl. 3, figs. A-B, 1889. --GOODE and BEAN,

Oceanic Ichth., p. 388, 1895 (reference). --ALCOCK, Cat.

Deep Sea Fishes Ind. Mus., p. 75, 1899 (Bengal Bay; Andamans;

Malabar; 10 to 250 fathoms). --WEBER, Siboga Exped., vol. 57,

p. 174, 1913 (Madura Sea; Bima Bay; Molo Strait; Borneo Bank;

north Celebes; Molucca Passage; Halmahera Sea; Waigiu; west

Ceram; Sula-Besi; Banda Sea; between Wowoni-Buton; Buton Strait;

between south Celebes-Saley; Ambon; Kei Islands; Savu Sea;

north Sumbawa; Flores Sea; 22 to 1500 meters).

Bregmaceros maclellandii DAY, Fishes of Malabar, p. 177, 1865;

Fauna of British India, Fishes, vol. 2, p. 433, 1889. --GARMAN,

Mem. Mus. Comp. Zool., vol. 24, p. 394, 1899 (reference).

--WEBER and BEAUFORT, Fishes Indo Austral. Archip., vol. 5, p.

6, fig. 2, 1929 (Weber's materials).

Bregmaceros maclellandi BLEEKER, Nederland Tijds. Dierk.,

vol. 4, p. 130, 1873 (1874) (reference). --DAY, Fishes of

India, pt. 3, p. 418, 1877 (India; China; Philippines);

Fauna of British India, Fishes, vol. 2, p. 433, fig. 151,

1889 (copied).

Bregmaceros maclellandii JORDAN and EVERMANN, Bull. U. S. Nat.

Mus., no. 47, pt. 3, p. 2526, 1898 (part). --BARNARD, Ann.

South African Mus., vol. 21, pt. 1, p. 325, June 1925

(Agulhas Bank to Natal; 30 to 185 fathoms).

Bregmaceros maclellandii GILCHRIST and THOMPSON, Ann. Durban

Mus., vol. 1, pt. 4, p. 319, May 21, 1917 (compiled).

Calloptilum mirum RICHARDSON, Zool. Voy. Sulphur, Ichth., p.

95, pl. 46, figs. 4-7, 1844 (type locality: China Seas?).

Asthenurus atripinnis TICKELL, Journ. Asiatic Soc. Bengal, vol.

34, p. 32, pl. 1, 1865 (type locality: Burma).

Bregmaceros atripinnis DAY, Proc. Zool. Soc. London, p. 522,

1869 (April 7, 1870) (Burma); Fishes of India, pt. 3, p.

418, pl. 91, fig. 1, 1877.

Bregmaceros japonicus TANAKA,

--JORDAN and THOMPSON, Mem. Carnegie Mus., vol. 6, no. 4,

p. 304, Sept. 1914 (Misaki). --JORDAN and HUBBS, Mem. Carnegie

Mus., vol. 10, no. 2, p. 326, June 27, 1925 (Toyana).

Genus Auchenoceros Günther

Auchenoceros GÜNTHER, Rep. Voy. Challenger, vol. 31, pt. 2,

p. 24, 1889. (Type Calloptilum punctatum HUTTON, monotypic.)

Body compressed, elongate. Head small, compressed, greater than trunk. Snout short. Eye moderate, anterior. Mouth large, terminal. Teeth villiform, in bands in jaws, none on palate. Gill openings wide, membranes not attached to isthmus. Pseudobranchiae none. Air bladder small. Pyloric coeca 8. Scales small, very delicate, deciduous. Two dorsals, anterior reduced to single rays from nape above pectoral, second fin more or less depressed in middle. One anal, long and low. Caudal small, free. Pectorals moderate, in upper half of body depth. Ventrals rudimentary, each of 2 long slender rays.

Auchenoceros punctatus (Hutton)

Calloptilum punctatum HUTTON, Trans. New Zealand Inst., vol.

5, p. 265, pl. 11, fig. 76a, 1872 (1873) (type locality: mouth of River Thames; and Cape Campbell).

Bregmaceros punctatus GÜNTHER, Ann. Mag. Nat. Hist., ser.

4, vol. 17, p. 398, 1876 (Cook Strait, New Zealand).

Auchenoceros punctatus GÜNTHER, Rep. Voy. Challenger, vol.

31, pt. 2, p. 26, pl. 3, fig. C (New Zealand). --WAITE, Rec.

Canterbury Mus., vol. 1, no. 1, p. 18, April 25, 1907 (reference).

Genus Antimora Günther

Antimora GÜNTHER, Ann. Mag. Nat. Hist., ser. 5, vol. 2, p. 18,

July 1, 1878. (Type Halaporphyrus rostratus GÜNTHER, monotypic.)

Body elongate. Snout conic, depressed, sharply keeled at sides, projects over mouth. Mouth rather large, lower jaw shorter than upper. Maxillary reaches below hind part of eye. Teeth in villiform bands in jaws. Vomerine teeth in small rounded patch, none on palatines. Mandibular barbel present. Muciferous channels on side of head well developed, cranial bones not solidified. Pseudobranchiae none. Branchiostegals 7. Pyloric coeca long, in moderate number. Scales small. Two dorsals, first of 4 or 5 rays, scarcely separated from second fin and first ray elongate. One anal, with long deep median depression. Caudal truncate. Ventrals narrow, rays 6. Vent postmedian.

Antimora australis Barnard

Antimora australis BARNARD, Ann. Mag. Nat. Hist., ser. 9, vol. 15,

p. 499, 1925 (type locality: off Cape Point); Ann. South African Mus., vol. 25, pt. 1, p. 321, June 1925 (types).

Antimora microlepis T. H. Bean

Antimora microlepis T. H. BEAN, Proc. U. S. Nat. Mus., vol. 13,

p. 38, 1890 (type locality: Cape St. James, Queen Charlotte

Islands, 876 fathoms). --GOODE and BEAN, Oceanic Ichth., p.

531, 1895 (reference). --GARMAN, Mem. Mus. Comp. Zool., vol.

24, p. 394, 1899 (reference). --GILBERT, Bull. U. S. Fish Comm.,

vol. 23, pt. 2, p. 656, 1903 (1905) (Kauai, 1000 to 1314 fathoms).

--BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 394,

1906 (reference). --JORDAN, TANAKA, SNYDER, Journ. College Sci.

Tokyo, vol. 33, art. 1, p. 407, 1913 (reference). --FOWLER, Mem.

Bishop Mus., vol. 10, p. 88, 1928 (compiled).

Antimora mikrolepis FRANZ, Abhandl. Kon. Bayern. Akad. Wiss.,

vol. 4, Suppl. Band 1, p. 29, 1910 (Aburatsubo).

Antimora rhina Garman

Antimora rhina GARMAN, Mem. Mus. Comp. Zool., vol. 24, p.

185 (394), 1899 (type locality: Gulf of Panama; 695 to 1020

fathoms). --BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15,

p. 394, 1906 (reference).

Antimora rostrata (Günther)

Haloporphyrus rostratus GÜNTHER, Ann. Mag. Nat. Hist., ser. 5,

vol. 2, p. 18, 1878 (type locality: deep sea midway between

Cape of Good Hope and Kerguelen's Land; east of mouth of Rio

Plata; 600 to 1375 fathoms).

Antimora rostrata GÜNTHER, Rep. Voy. Challenger, vol. 22, p. 92,

pl. 16, fig. A, 1887 (types). --GOODE and BEAN, Oceanic Ichth.,

p. 375, 1895 (copied). --GARMAN, Mem. Mus. Comp. Zool., vol.

24, p. 393, 1899 (reference). --BRAUER, Deutsch. Tiefsee Exped.

Valdivia, vol. 15, p. 394, 1906 (reference)

Antimora viola (Goode and Bean)

Halaporphyrus viola GOODE and BEAN, Proc. U. S. Nat. Mus., vol.

1, p. 257, 1878 (1879) (type locality: outer edge Le Have

Bank, north west Atlantic, 400 to 500 fathoms).

Antimora viola GÜNTHER, Rep. Voy. Challenger, vol. 22, p. 94,

pl. 15, 1887 (lat. $43^{\circ} 41'$ N., long. $59^{\circ} 15'$ W.). --GOODE and

BEAN, Oceanic Ichth., p. 372, pl. 93, fig. 324, 1895 (lat. 33°

to 41° N., long. 65° to 75° , 306 to 1434 fathoms). --GARMAN,

Mem. Mus. Comp. Zool., vol. 24, p. 393, 1899 (reference).

--BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 394,

1906 (reference). --MC CULLOCH, Austral. Mus. Mem., no. 5,

pt. 1, p. 129, June 20, 1929 (Tasmania).

Genus Euclichthys Mc Culloch

Euclichthys MC CULLOCH, Biol. Res. Endeavour, vol. 5, pt. 4,

p. 174, June 8, 1926. (Type Euclichthys polynemus MC CULLOCH,

orthotypic.)

Body elongate, compressed. Head compressed, with broad septate canals covered by membrane, upper profile curved. Snout rather obtuse. No mandibular barbel. Band of villiform teeth in each jaw. Palate toothless. Gill opening far forward, membranes joined across isthmus. Gill rakers about 19 below, long, slender. Pseudobranchiae rudimentary, covered with membrane. Branchiostegals 7. Scales moderate, deciduous. Two dorsals, interspace very narrow, first fin high with numerous rays and second not deeply incised. Anal divided in two, first short and high, followed by long series of short rays, increasing in length backward. Caudal free. Pectorals pointed, over half of head. Ventrals with narrow bases, each of 5 filamentous rays of which anterior divided in two.

Related to Halargyreus, differing in the anal fin almost divided into two instead of notched. Also differs in form of its ventrals.

Euclichthys polynemus McCulloch

Euclichthys polynemus MC CULLOCH, Biol. Res. Endeavour, vol.

5, pt. 4, p. 174, pl. 44, fig. 2, June 8, 1926 (type locality:

Great Australian Bight, 190 to 450 fathoms); Austral. Mus. Mem.,

no. 5, pt. 1, p. 129, June 29, 1929 (reference).

Genus Lotella Kaup

Lotella KAUP, Archiv Naturges., vol. 24, pt. 1, p. 88, 1858.

(Type Lotella schleggii KAUP, monotypic.)

Body moderately long. Mandibular barbel present. Upper teeth in band and with outer series of larger ones. No vomerine or palatine teeth. Branchiostegals 7, or 6? Scales small. Two dorsals. One anal. Caudal separate from vertical fins. Ventral fins with flat base and each with several rays.

Lotella callarias Günther

Lotella callarias GÜNTHER, Ann. Mag. Nat. Hist., ser. 3, vol.

11, p. 116, Jan. 1, 1863 (type locality: Victoria, Australia).

--MC COY, Prodr. Zool. Victoria, dec. 2, pl. 19, 1878. --OGILBY,

Austral. Mus. Mem., no. 2, p. 70, 1889 (Lord Howe Island); Proc.

Linn. Soc. New South Wales, vol. 23, p. 745, 1899 (Lord Howe

Island). --WAITE, Rec. Austral. Mus., vol. 5, pt. 3, p. 225,

March 11, 1904 (compiled). --MC CULLOCH, Austral. Mus. Mem., no.

5, pt. 1, p. 128, June 29, 1929 (compiled).

Lotella schuettei STEINDACHNER, Sitzs. Ber. Akad. Wiss.

Wien, math.-nat. Kl., vol. 53, p. 466, pl. 3, fig. 1, 1866

(type locality: Port Jackson, Australia).

Lotella marginata (not GÜNTHER 1878) MACLEAY, Proc. Linn. Soc.

New South Wales, vol. 6, p. 114, 1881 (type locality: Port Jackson).

? Lotella swanii JOHNSTON, Pap. Proc. Roy. Soc. Tasmania, p.

126, 1882 (1883) (type locality: Tasmania).

Lotella limbata OGILBY, Cat. Fishes New South Wales, p. 47,

1886 (on Lotella marginata MACLEAY).

Lotella macleayi RENDAHL, Nat. Hist. Juan Fernandez and Easter

Island, Skottsberg, vol. 3, p. 54, 1920 (on Lotella marginata MACLEAY).

Lotella fuliginosa Günther

Lotella fuliginosa GÜNTHER, Cat. Fishes Brit. Mus., vol. 4,

p. 347, 1862 (type locality: locality ? [Sydney, New South

Wales]). --GOODE and BEAN, Oceanic Ichth., p. 369, 1895

(reference). --MC CULLOCH, Austral. Mus. Mem., no. 5, pt. 1,

p. 128, June 29, 1929 (reference).

Lotella rubiginosa CASTELNAU, Proc. Linn. Soc. New South Wales,

vol. 3, p. 354, 1879.

Lotella marginata Günther

Lotella marginata GÜNTHER, Ann. Mag. Nat. Hist., ser. 5, vol. 2,

p. 19, 1878 (type locality: Pacific coast of south western

South America, 120 to 345 fathoms); Rep. Voy. Challenger, vol.

22, p. 86, pl. 14, fig. A, 1887 (Magellan Strait; Messier Channel;

125 to 345 fathoms). --GOODE and BEAN, Oceanic Ichth., p. 368,

1895 (reference). --GARMAN, Mem. Mus. Comp. Zool., vol. 24, p.

394, 1899 (reference). --BRAUER, Deutsch. Tiefsee Exped. Valdivia,

vol. 15, p. 393, 1906 (reference).

Key to Bugmaceros

Parr, Bull. Bingham
Oceanogr. Coll., vol. 2,
p. 49, 1926.

14.75

Lotella maxillaris T. H. Bean

Lotella maxillaris T. H. BEAN, Proc. U. S. Nat. Mus., vol. 7,

p. 241, 1889 (type locality: lat. 39° 55' N., long. 70° 28'

W., Gulf Stream, 396 fathoms). --VERRILL, Amer. Journ. Sci.

Arts, vol. 22, p. 296, 1881 (type). --GÜNTHER, Rep. Voy.

Challenger, vol. 22, p. 86, 1887 (note). --JORDAN, Rep. U. S.

Fish. Comm., pt. 13, p. 918, 1885 (1887) (name). --GOODE and

BEAN, Oceanic Ichth., p. 368, pl. , fig. 321, 1895 (type).

--JORDAN and EVERMANN, Bull. U. S. Nat. Mus., no. 47, pt. 3,

p. 2546, 1898 (copied). --GARMAN, Mem. Mus. Comp. Zool., vol.

24, p. 394, 1899 (reference). --BRAUER, Deutsch. Tiefsee Exped.

Valdivia, vol. 15, p. 393, 1906 (reference).

Lotella maximowiczi Herzenstein

Lotella maximowiczi HERZENSTEIN, Annuaire Akad. Imp. Sci. St.

Petersb., p. 13, 1896 (type locality: Hakodate). --JORDAN, TANAKA,

SNYDER, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 408,

1913 (compiled).

Lotella phycis (Schlegel)

Lota phycis SCHLEGEL, Fauna Japonica, Poiss., pts. , p.

248, pl. 111, fig. 1, 1846 (type locality: Japan).

Lotella phycis GÜNTHER, Cat. Fishes Brit. Mus., vol. 4, p. 346,

1862 (copied). --STEINDACHNER and DÜDERLEIN, Denks. Akad.

Wiss. Wien, math.-nat. Kl., vol. 49, pt. 1, p. 277, 1885

(Tokyo). --GOODE and BEAN, Oceanic Ichth., p. 368, 1895 (reference).

--JORDAN and SNYDER, Annot. Zool. Japon., vol. 3, p. 118, 1901

(compiled). --SMITH and POPE, Proc. U. S. Nat. Mus., vol. 31,

p. 494, 1906 (Matsushima Bay). --FRANZ, Abhandl. Kon. Bayer.

Akad. Wiss., vol. 4, Suppl. band 1, p. 28, 1910 (Aburatsubo,

Yokohama, Misaki). --SNYDER, Proc. U. S. Nat. Mus., vol. 42, p.

450, 1912 (Hakodate; Aikawa). --JORDAN, TANAKA, SNYDER, Journ.

College Sci. Tokyo, vol. 33, art. 1, p. 408, 1913 (compiled).

--JORDAN and RICHARDSON, Mem. Carnegie Mus., vol. 6, no. 4,

p. 304, Sep. 1914 (Sagami Bay).

Lotella schlegeli KAUP, Archiv Naturges., vol. 24, pt. 1, p. 88,

1858 (on SCHLEGEL).

Genus Physiculus Kaup

Physiculus KAUP, Archiv Naturges., vol. 24, pt. 1, p. 88, 1858.

(Type Physiculus dalwigki KAUP, monotypic.)

Pseudophycis GÜNTHER, Cat. Fishes Brit. Mus., vol. 4, p. 350,

1860. (Type Lota breviscula RICHARDSON — Enchelyopus bachus

SCHNEIDER, monotypic.)

Leptophycis GARMAN, Mem. Mus. Comp. Zool., vol. 24, p. 182, 1899.

(Type Leptophycis filifer GARMAN, monotypic.)

Body elongate, rather robust, tail compressed and strongly tapering. Snout short, broad, blunt, obtusely rounded, projects beyond mouth. Eye large. Maxillary reaches opposite center of eye. Mandibular barbel usually present, sometimes absent. Mouth moderate or large, terminal, oblique, lower jaw included. Teeth in villiform bands in jaws, minute, equal. Vomer and palate toothless. Gill openings wide, membranes united below throat, free from isthmus. Gill rakers short, slender. Gills 4. Pseudobranchiae glandular. Scales small, cycloid, rather deciduous, extend on head. Lateral line present. Dorsals two, nearly contiguous, first arising above pectoral base, second arising immediately behind first and fin long. Anal single, not notched. Dorsals and anal covered with loose scaleless membranes. Caudal rounded or pointed, slender, free. Ventrals on very narrow wide set bases, rays 3 to 7, outer two elongate and filamentous. Vent well premedian.

Species usually found in deep water.

Physiculus argyropastus Alcock

Physiculus argyropastus ALCOCK, Journ. Asiatic. Soc. Bengal,

vol. 62, pt. 2, p. 180, pl. 9, fig. 2, 1893 (type locality:

Bengal Bay, 128 to 170 fathoms); vol. 63, pt. 2, p. 121, 1894

(Bengal Bay, 162 to 170 fathoms); Illustrat. Zool. Investigator,

pt. 5, pl. 22, fig. 1, 1898; Cat. Deep Sea Fishes Indi^a Mus.,

p. 77, 1899 (Bengal Bay; Gulf of Manaar; 180 to 217 fathoms).

----GARMAN, Mem. Mus. Comp. Zool., vol. 24, p. 394, 1899 (reference).

--BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 393,

1906 (reference).

Physiculus bachus (Schneider)

Enchelyopus bachus SCHNEIDER, Syst. Ichth., Bloch, p. 53, 1801

(type locality: New Zealand).

Gadus bachus FORSTER, in SCHNEIDER, Syst. Ichth., Bloch, p. 53,

1801 (name in synonymy).

Lota bacchus CUVIER, Règne Animal, vol. 2, pt. 2, p. 334, 1829

(footnote).

Lotella bacchus HUTTON, Fishes of New Zealand, p. 46, 1872

(Wellington Harbor). --HECTOR, Edible Fish. New Zealand,

p. 115, pl. 7, fig. 75, 1872 (Port Clarence).

Pseudophycis bachus GÜNTHER, Rep. Voy. Challenger, vol. 1, pt.

6, p. 26, 1880 (Port Hardy, D'Urville Island, New Zealand),

p. 28 (Twofold Bay, South Australia).

Physiculus bacchus GÜNTHER, Rep. Voy. Challenger, vol. 22, p. 87,

1887 (reference).

Physiculus bachus WAITE, Rec. Canterbury Mus., vol. 1, no. 1,

p. 18, April 25, 1907 (reference). --MC CULLOCH, Austral. Mus.

Mem., no. 5, pt. 1, p. 129, June 29, 1929 (New South Wales;

South Australia; New Zealand).

? Blennius venustus SOLANDER, in RICHARDSON, Rep. Brit. Assoc. Adv.

Sci., 1842 (1843), p. 27 (type locality: Tolaga Bay, New Zealand);

PARKINSON, in RICHARDSON, p. 27 (Ship Cope, New Zealand).

Lota breviuscula RICHARDSON, Voy. Erebus and Terror, Fishes, p. 61,

pl. 38, figs. 1-2, 1844-48 (1846) (type locality: Bay of Islands,

New Zealand).

Physiculus breviusculus GÜNTHER, Cat. Fishes Brit. Mus., vol. 4,

p. 350, 1860 (type; New Zealand). --GOODE and BEAN, Oceanic

Ichth., p. 365, 1895 (reference).

Pseudophycis breviusculus HUTTON, Fishes of New Zealand, p. 47,

1872 (Dusky Bay).

Physiculus barbatus (Günther)

Pseudophycis barbatus GÜNTHER, Ann. Mag. Nat. Hist., ser. 3,

vol. 11, p. 116, Jan. 1, 1863 (type locality: Victoria, Australia).

Physiculus barbatus GOODE and BEAN, Oceanic Ichth., p. 365, 1895

(reference). -- MC CULLOCH, Austral. Mus. Mem., no. 5, pt. 1, p.

128, June 29, 1929 (Victoria, South Australia, Tasmania, New

South Wales, New Zealand).

Physiculus palmatus KLUNZINGER, Archiv. Naturges., vol. 38, pt. 1,

p. 38, 1872 (type locality: Hobson's Bay); Sitzs. Ber. Akad. Wiss.

Wien, Math. nat. Kl., vol. 80, pt. 1, p. 405 (Hobson's Bay, Port

Philip, Queens Cliff). --STEINDACHNER, Denks. Akad. Wiss. Wien,

Math.-nat. Kl., vol. 41, pt. 1, p. 12, 1879 (Hobson's Bay).

Lotella grandis RAMSAY, Proc. Linn. Soc. New South Wales, vol.

5, pt. 4, p. 462, 1880 (1881) (type locality: Wollongong, New South Wales).

Physiculus capensis Gilchrist

Physiculus capensis GILCHRIST, Fisher. Mar. Biol. Surv. South

Australia, Rep. no. 2, pt. 3, p. 62, 1922 (type locality:

Natal coast, 91 to 220 fathoms). --BARNARD, Ann. South African

Mus., vol. 20, pt. 1, p. 326, June 1925 (Agulhas Bank; Algoa

Bay; East London; 25 to 310 fathoms).

Physiculus dalwigki Kaup

Physiculus dalwigki KAUP, Archiv Naturges., vol. 24, pt. 1, p.

88, 1858 (type locality: Mediterranean). --BRAUER, Deutsch.

Tiefsee Exped. Valdivia, vol. 15, p. 393, 1906 (reference).

Physiculus dalwigkii GÜNTHER, Cat. Fishes Brit. Mus., vol. 4,
p. 348, 1862 (Madeira); Proc. Zool. Soc. London, p. 226, 1868
(St. Helena). --MELLISS, St. Helena, p. 109, pl. 21, fig. 4,
1875. --DÜDERLEIN, Prosp. Pesc. Sicil., p. 1878 (Palermo;
Messina). --GÜNTHER, Rep. Voy. Challenger, vol. 1, pt. 6, p.
63, 1880 (off Inoshima, 345 fathoms). --JORDAN and GILBERT, Bull.
U. S. Nat. Mus., no. 16, p. 801, 1883 (copied). --STEINDACHNER
and DÜDERLEIN, Denks. Akad. Wiss. Wien, math.-nat. Kl., vol.
49, pt. 1, p. 279, 1885 (Tokyo Bay). --GÜNTHER, Rep. Voy.
Challenger, vol. 22, p. 88, 1887 (Madeira). --VAILLIANT, Expéd.
Sci. Travailleur et Talisman, Poiss., p. 290, pl. 25, fig. 3-C,
1888 (Madeira; off Soudan; 640 to 782 meters). --CARUS, Prodr.
Medit., vol. 2, p. 575, 1893 (compiled). --GOODE and BEAN, Oceanic
Ichth., pp. 366, 531, 1895 (copied). --GARMAN, Mem. Mus. Comp.
Zool., vol. 24, p. 394, 1899 (reference).

Physiculus fulvus T. H. Bean

Physiculus fulvus T. H. BEAN, Proc. U. S. Nat. Mus., vol. 7,

p. 240, 1884 (1885) (type locality: lat. $40^{\circ} 1'$ N., long.

$69^{\circ} 56'$ W., Gulf Stream, 79 fathoms). --GODDE and BEAN,

Oceanic Ichth., p. 366, pl. 91, fig. 319, 1895 (type; lat.

20° to 77° N., long. 74° to 87° W.; 80 to 955 fathoms).

--BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 393,

1906 (reference). --JORDAN, EVERMANN, CLARK, Rep. U. S. Fish

Comm., pt. 2, p. 212, 1930 (reference).

Physiculus japonicus Hilgendorf

Physiculus japonicus HILGENDORF, Sitzs. Ber. Naturforsch. Freund.

Berlin, p. 80, 1879 (type locality: Yokohama, Japan). --GARMAN,

Mem. Mus. Comp. Zool., vol. 24, p. 394, 1899 (reference). --

JORDAN and SNYDER, Annot. Zool. Japon., vol. 3, p. 119, 1901

(reference). --JORDAN and STARKS, Bull. U. S. Fish Comm., vol.

22, p. 601, 1902 (1904) (Ose Point, Suruga Bay). --SMITH and

POPE, Proc. U. S. Nat. Mus., vol. 31, p. 494, 1906 (Kagoshima).

--FRANZ, Abhandl. Kon. Bayer. Akad. Wiss., vol. 4, Suppl. Band

1, p. 27, fig. 20, pl. 10, figs. 10-11, 1910 (Sagami Bay,

Yokohama, Aburatsubo). --SNYDER, Proc. U. S. Nat. Mus., vol. 42,

p. 450, 1912 (Hakodate). --RADCLIFFE, Proc. U. S. Nat. Mus., vol.

43, p. 106, 1912 (Kagoshima example). --JORDAN, TANAKA, SNYDER ,

Journ. College Sci., Tokyo, vol. 33, art. 1, p. 408, 1913 (compiled).

JORDAN and JORDAN, Mem. Carnegie Mus., vol. 10, no. 1, p. 23,

December 1922 (copied HILGENDORF). --JORDAN and HUBBS, Mem. Carnegie

Mus., vol. 10, no. 2, p. 326, June 27, 1925 (Shizuoka; Misaki).

Physiculus kaupi (not POEY) GÜNTHER, Rep. Voy. Challenger,

vol. 22, p. 88, pl. 17, fig. A, 1887 (Japan, 345 fathoms).

--GOODE and BEAN, Oceanic Ichth., p. 366, 1895 (reference).

--FOWLER, Occas. Pap. Bishop Mus., vol. 10, no. 7, p. 392,

1923 (Honolulu); Mem. Bishop Mus., vol. 10, p. 88, pl. 4 A,

1928 (Honolulu).

Physiculus dalwigkii (not KAUP) STEINDACHNER and DÜDERLEIN,

Denks. Akad. Wiss. Wien, math.-nat. Kl., vol. , pt. ,

p. 279, 1887 (). --JORDAN and SNYDER, Annot. Zool.

Japon., vol. 3, p. 119, 1901 (reference).

Lotella phycis (not SCHLEGEL) JORDAN and SNYDER, Proc. U. S.

Nat. Mus., vol. 23, p. 376, 1901 (Tokyo).

Physiculus grimmei JORDAN and JORDAN, Mem. Carnegie Mus., vol.

10, no. 1, p. 22, pl. 1, fig. 3, Dec. 1922 (type locality:

Honolulu).

Physiculus kaupi Poey

Physiculus kaupi POEY, Repert. Fis. Nat. Cuba, p. 186, 1865

(type locality: Cuba). --JORDAN and EVERMANN, Bull. U. S.

Nat. Mus., no. 47, pt. 3, p. 2548, 1898 (copied). --BRAUER,

Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 393, 1906 (reference).

--JORDAN, EVERMANN, CLARK, Rep. U. S. Commiss. Fisher., pt. 2,

p. 211, 1930 (reference).

Physiculus longifilis Weber

Physiculus longifilis WEBER, Siboga Exped., vol. 57, p. 178,

pl. 5, fig. 6, 1913 (type locality: lat. 8° 27' S., long.

122° 54:3 E., Flores Sea, 247 meters). --WEBER and BEAUFORT,

Fishes Indo Austral. Archip., vol. 5, p. 10, fig. 3, 1929 (type).

Physiculus longipes Garman

Physiculus longipes GARMAN, Mem. Mus. Comp. Zool., vol. 24,

p. 188 (394), pl. 42, fig. 2-a, 1899 (type locality: Gulf

of Panama; lat. 7° N., 79° to 80° W.; 127 to 695 fathoms).

--BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 393,

1906 (reference). --JORDAN, EVERMANN, CLARK, Rep. U. S. Comm.

Fisher., pt. 2, p. 212, 1930 (reference).

Physiculus natalensis Gilchrist

Physiculus natalensis GILCHRIST, Fisher. Mar. Biol. Surv.

South Africa, Rep. no. 2, pt. 3, p. 63, 1922 (type locality:

Natal coast, 183 fathoms). --BARNARD, Ann. South African Mus.,

vol. 21, pt. 1, p. 327, June 1925 (type).

Physiculus nematopus Gilbert

Physiculus nematopus GILBERT, Proc. U. S. Nat. Mus., vol. 13,
p. 114, 1890 (type locality: Gulf of California, 71 to 221
fathoms). --JORDAN and EVERMANN, Bull. U. S. Nat. Mus., no.
47, pt. 3, p. 2548, 1898 (copied). --BRAUER, Deutsch. Tiefsee
Exped. Valdivia, vol. 15, p. 393, 1906 (reference). --JORDAN,
EVERMANN, CLARK, Rep. U. S. Comm. Fisher., pt. 2, p. 212,
1930 (reference).

Physiculus nigrescens Smith and Radcliffe

Physiculus nigrescens SMITH and RADCLIFFE, Proc. U. S. Nat. Mus.,
vol. 43, p. 105, pl. 22, fig. 1, 1912 (type locality: lat. 13°
40' 9" N., long. 120° 57' 45", Verde Island Passage, 210 fathoms).

Physiculus peregrinus (Günther)

Pseudophycis peregrinus GÜNTHER, Proc. Zool. Soc. London, p.
669, 1871 (type locality: Manado, Celebes).

Physiculus peregrinus MEYER, Anal. Soc. Espan. Hist. Nat.

Madrid, vol. 14, p. 39, 1885 (Manado). --GÜNTHER, Rep. Voy.

Challenger, vol. 22, p. 88, 1887 (reference). --GODDE and BEAN,

Oceanic Ichth., p. 366, 1895 (copied). --WEBER and BEAUFORT,

Fishes Indo Austral. Archip., vol. 5, p. 9, 1929 (copied).

Physiculus rastrelliger Gilbert

Physiculus rastrelliger GILBERT, Proc. U. S. Nat. Mus., vol. 13,

p. 113, 1890 (type locality: off Lower California, 171 to 184

fathoms). --JORDAN and EVERMANN, Bull. U. S. Nat. Mus., no. 47,

pt. 3, p. 2549, 1898 (compiled). --BRAUER, Deutsch. Tiefsee

Exped. Valdivia, vol. 15, p. 393, 1906 (reference). --FOWLER,

Proc. Acad. Nat. Sci. Philadelphia, 1923, p. 296 (La Jolla,

California). --JORDAN, EVERMANN, CLARK, Rep. U. S. Comm. Fisher.,

pt. 2, p. 212, 1930 (reference).

Physiculus rhacinus (Forster)

Gadus rhacinus FORSTER, in LICHTENSTEIN, Descript. Animal., p.

304, 1844 (type locality: Queen Charlotte Sound, New Zealand).

Lotella rhacinus HUTTON, Fishes of New Zealand, p. 46, 1872

(Cook Strait).

Physiculus rhacinus WAITE, Rec. Canterbury Mus., vol. 1, no.

1, p. 18, April 25, 1907 (reference).

Physiculus roseus Alcock

Physiculus roseus ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol.

8, p. 28, July 1891 (type locality: lat. 11° 31' 40" N., long.

92° 46' 40" E., Andaman Sea); Journ. Asiatic Soc. Bengal, vol.

63, pt. 2, p. 122, 1894 (); Illustrat. Zool.

Investigator, pt. 2, pl. 11, fig. 2, 1894. --GOODE and BEAN,

Oceanic Ichth., p. 530, 1895 (copied). --ALCOCK. Cat. Deep Sea

Fishes India Mus., p. 76, 1899 (Andaman Sea, 185 to 220 fathoms).

--GARMAN, Mem. Mus. Comp. Zool., vol. 24, p. 394, 1899 (reference).

--BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 393,

1906 (reference). --WEBER, Siboga Exped., vol. 57, p. 177, 1913

(between Kajoa - Batjan; Arafura Sea; 310 to 397 meters). --WEBER

and BEAUFORT, Fishes Indo Austral. Archip., vol. 5, p. 8, 1929

(Weber's materials).

Genus Austrophycis Ogilby

Austrophycis OGILBY, Proc. Linn. Soc. New South Wales, vol.

22, pt. 1, p. 90, April 28, 1897. (Type Austrophycis

megalops OGILBY, monotypic.)

Body moderately long, strongly compressed. Head rather large, tumid. Snout short, rounded. Eye large, supralateral. Mandibular barbel present. Mouth anterior, cleft wide, oblique, lower jaw included. Premaxillaries slightly protractile, form entire dental area of upper jaw; maxillary narrow, terminal end exposed and but little expanded. Upper jaw with narrow band of small cardiform teeth, 2 outer series enlarged and separated from inner portion, which triserial, by distinct interspace; lower teeth triserial, like upper. Vomer, palatines, pterygoids and tongue toothless. Nostrils together, in deep depression before eye. Opercle with feeble spine, not piercing skin and with border serrated. Gill opening wide, extends forward below mouth angle. Gill rakers few, distant, serrulated. Isthmus wide. Branchiostegals 6. Scales moderate, cycloid, imbricate. Dorsals 2; first well developed, rays 10; second dorsal and anal long and low, latter longer and begins below middle of interdorsal space, separated from caudal by short interspace. Vertical fins largely enveloped in thick skin. Caudal homocercal, narrow. Pectoral well developed, pointed, rays 25. Ventrals widely separated, inserted little behind isthmus, of 5 slender rays on narrow base.

Differs from *Physiculus* in its dentition, opercular armature and anterior origin of anal fin. A single small species on the New South Wales coast.

Austrophycis megalops Ogilby

Austrophycis megalops OGILBY, Proc. Linn. Soc. New South

Wales, vol. 22, pt. 1, p. 91, April 28, 1897 (type locality:

Maroubra, New South Wales). --MC CULLOCH, Austral. Mus. Mem.,

no. 5, pt. 1, p. 129, June 29, 1929 (reference).

Genus Laemonema Günther

Laemonema GÜNTHER, Cat. Fishes Brit. Mus., vol. 4, p. 356, 1862.

(Type Phycis yarrellii LOWE, designated by JORDAN, Genera of Fishes, pt. 3, p. 318, 1919).

Body moderately long. Maxillary reaches below middle of eye. Mandibular barbel usually present. Teeth villiform, slender, in bands in jaws. Small patch of vomerine teeth, none on palatines. Gill rakers long, slender, numerous. Branchiostegals 7. Scales small. Fins naked. Dorsals 2, first of 5 rays, fins narrowly separated. One anal. Caudal separate, rounded or bluntly pointed. Ventral reduced to single long ray, bifid at end or of 3 rays. Vent median or just opposite level of end of pectoral.

Laemonema barbatula Goode and Bean

Laemonema barbatula GOODE and BEAN, Bull. Mus. Comp. Zool.,

vol. 10, no. 5, p. 204, 1882 (1883) (type locality: lat. 32°

43' 25" N., long. 77° 20' 30" W., Gulf Stream, 230 fathoms;

lat. 38° 35' N., long. 73° 13' W., 225 to 312 fathoms).

--JORDAN, Rep. U. S. Fish Comm., pt. 13, p. 917, 1885 (1887).

(reference). --GOODE and BEAN, Oceanic Ichth., p. 362, 1895

(lat. 32° to 38° N., long. 73° to 78° W., 225 to 312 fathoms).

Laemonema barbatulum GÜNTHER, Rep. Voy. Challenger, vol. 22, p.

90, 1887 (Gulf Stream). --GARMAN, Mem. Mus. Comp. Zool., vol.

24, p. 394, 1899 (reference). --BRAUER, Deutsch. Tiefsee Exped.

Valdivia, vol. 15, p. 393, 1906 (reference). --JORDAN, EVERMANN,

CLARK, Rep. U. S. Comm. Fisher., pt. 2, p. 213, 1929

(reference).

Laemonema globiceps Gilchrist

Laemonema globiceps GILCHRIST, Marine Investig. South Africa,
vol. 4, p. 157, pl. 43, 1906 (type locality: Cape Point, 460
to 800 fathoms); Fisher. Mar. Biol. Surv., Rep. no. 2, p. 63,
1922 (Natal coast, 790 fathoms). --BARNARD, Ann. South African
Mus., vol. 21, pt. 1, p. 327, August 1925 (Cape Point, 345 to
800 fathoms).

Laemonema gracillipes Garman

Laemonema gracillipes GARMAN, Mem. Mus. Comp. Zool., vol. 24,
p. 187 (394), pl. 42, 1899 (type locality: lat. 0° to 7° N.,
long. 79° to 90° W.; Gulf of Panama; Galapagos Islands; 182
to 331 fathoms). --BRAUER, Deutsch. Tiefsee Exped. Valdivia,
vol. 15, p. 393, 1906 (reference). --JORDAN, EVERMANN, CLARK,
Rep. U. S. Fish. Comm., pt. 2, p. 213, 1929 (reference).

Laemonema melanurum Goode and Bean

Laemonema melanurum GOODE and BEAN, Oceanic Ichth., p. 363,

pl. 90, fig. 316, 1895 (type locality: lat. $31^{\circ} 26'$ N.,

long. $79^{\circ} 07'$ W., 440 fathoms; lat. 11° to 39° N., long.

69° to 88° W., 208 to 1467 fathoms). --GARMAN, Mem. Mus. Comp.

Zool., vol. 24, p. 394, 1899 (reference). --BRAUER, Deutsch.

Tiefsee Exped. Valdivia, vol. 15, p. 393, 1906 (reference).

--JORDAN, EVERMANN, CLARK, Rep. U. S. Comm. Fisher., pt. 2,

p. 213, 1929 (reference).

Laemonema rhodochir Gilbert

Laemonema rhodochir GILBERT, Bull. U. S. Fish Comm., vol. 23,

pt. 2, p. 657, fig. 255, 1903 (1905) (type locality: off Oahu,

53 to 211 fathoms). --BRAUER, Deutsch. Tiefsee Exped. Valdivia,

vol. 15, p. 393, 1906 (reference). --FOWLER, Mem. Bishop Mus.,

vol. 10, p. 88, 1928 (compiled).

Laemonema robustum Günther

Laemonema robustum GÜNTHER, Cat. Fishes Brit. Mus., vol. 4,

p. 357, 1862 (type locality: Madeira); Rep. Voy. Challenger,

vol. 22, p. 90, 1887 (name). --VAILLANT, Expéd. Sci. Travailleur

et Talisman, Poiss., p. 286, 1888 (type locality: off Morocco;

Cape Verde Islands; 460 to 760 meters). --GOODE and BEAN,

Oceanic Ichth., p. 362, 1895 (compiled). --GARMAN, Mem. Mus.

Comp. Zool., vol. 24, p. 394, 1899 (reference). --BRAUER,

Deutsch. Tiefsee Exped. Valdivia, vol. 15, p. 393, 1906

(reference).

Laemonema yarrellii (Lowe)

Phycis yarrellii LOWE, Trans. Zool. Soc. London, vol. 2, p.

(184) 190, 1837 (type locality: Madeira); Fishes of Madeira,

p. 43, pl. 7, 1843 (Madeira).

Laemonema yarrellii GÜNTHER, Cat. Fishes Brit. Mus., vol. 4, p.

356, 1862 (type); Rep. Voy. Challenger, vol. 22, p. 90, 1887

(name). --GOODE and BEAN, Oceanic Ichth., p. 362, 1895 (compiled).

Laemonema yarrellii BRAUER, Deutsch. Tiefsee Exped. Valdivia,

vol. 15, p. 393, 1906 (reference).

Genus Laemonemodes Gilchrist

Laemonemodes GILCHRIST, Marine Investig. South Africa, vol.

2, p. 208, 1903 (1904). (Type Laemonemodes compressicauda

GILCHRIST, monotypic.)

Body moderately elongate. Snout moderately blunt. Mouth moderately large, lower jaw shorter than upper. Maxillary reaches opposite middle of eye. Teeth in bands in both jaws and on vomer, none on palatines. Mandibular barbel present. Branchiostegals 7. Gill rakers ? Pyloric coeca? Two dorsals, narrowly separated, first fin of 5 rays. Anal single Caudal pointed. Ventral rays 8, outermost 2 very long and united for greater part their length, inner 6 very minute. Vent below middle of pectoral.

Differs from *Laemonema* in the structure of the ventral fins.

Laemonemodes compressicauda Gilchrist

Laemonemodes compressicauda GILCHRIST, Marine Investig. South

Africa, vol. 2, p. 208, pl. 16, 1903 (1904) (type locality:

Bashee River beacon on East Coast bearing N. $\frac{1}{2}$ E. distant 15 miles,

300 to 400 fathoms); Fisher. Mar. Biolog. Surv., Rep. no. 2,

p. 64, 1922 (Natal coast, 420 fathoms). --BARNARD, Ann. South

African Mus., vol. 21, pt. 1, p. 328, pl. 13, fig. 2, June 1925

(off East London; Natal coast; 300 to 420 fathoms).

Genus Gaidropsarus Rafinesque

Gaidropsarus RAFINESQUE, Ind. Ittiol. Sicil., pp. 11, 51, 1810.

(Type Gadus mustellaris RAFINESQUE = Gadus mustela LINNAEUS,
monotypic.)

Enchelyopus (not GRONOW 1763) SCHNEIDER, Syst. Ichth., Bloch,

p. 59, 1801. (Type Gadus cimbrius LINNAEUS, designated by

JORDAN and EVERMANN, Genera of Fishes, pt. 1, p. 57, 1917.)

Dropsarus RAFINESQUE, Analyse de la nature, p. 82, 1815. (Type

Gadus mustela LINNAEUS, virtually. Dropsarus RAFINESQUE

proposed to replace Gaidropsarus RAFINESQUE.)

Mustel OKEN, Isis, p. 1182, 1817 (on Les Musteles CUVIER, Règne

Animal, vol. 2, p. 215, 1817). (Type Gadus mustela LINNAEUS,

tautotypic.)

Mustela (not LINNAEUS 1758) OKEN, Isis, p. 1182, 1817. (On

Les Musteles CUVIER, Règne Animal, vol. 2, p. 215, 1817.

Type Gadus mustela LINNAEUS.)

Onos RISSO, Hist. Nat. Eur. Mérid., vol. 3, p. 214, 1826.

(Type Gadus mustela LINNAEUS, designated by JORDAN and
EVERMANN, Genera of Fishes, pt. 1, p. 119, 1917.)

Motella CUVIER, Règne Animal, ed. 2, vol. 2, p. 334, 1829.

(Type Gadus mustela LINNAEUS, virtually. Motella CUVIER
proposed to replace Mustela .)

Ciliata COUCH, Mag. Nat. Hist., vol. 5, p. 15, 1832. (Type

Ciliata glauca COUCH = Gadus mustela LINNAEUS, monotypic.)

Couchia THOMPSON, Nat. Hist. Ireland, vol. 4, p. 188, 1856.

(Type Couchia minor THOMPSON = Gadus mustela LINNAEUS, monotypic.)

Molvilla KAUP, Archiv Naturges., vol. 24, pt. 1, p. 90, 1858.

(Type Molvilla borealis KAUP = Gadus mustela LINNAEUS, monotypic.)

Hysiptera GÜNTHER, Cat. Fishes Brit. Mus., vol. 2, p. 386, 1860.

(Type Hysiptera argentea GÜNTHER, monotypic.)

Rhinonemus GILL, Proc. Acad. Nat. Sci. Philadelphia, p. 241,

1863. (Type Gadus cimbrius LINNAEUS, designated by JORDAN,

Genera of Fishes, pt. 3, p. 325, 1919.)

Body elongate, rounded in front, compressed behind. Caudal peduncle distinct. Head flattened above. Snout short, rounded. Mouth moderate, lower jaw shorter than upper. Maxillary reaches to eye or slightly beyond. Teeth in band in each jaw and on vomer. Barbels 3 or more on snout, lips and below mandibular symphysis. Gill rakers nearly obsolete. No pseudobranchiae. Branchiostegals 6 or 7. Vertebrae 48 or 49, of which 32 or 33 caudal. Pyloric coeca 8. Scales minute. Two dorsals, first of very slender small rays, as fringe in depression, first ray prolonged; second fin elongate and also reaches caudal base. Anal single. Caudal distinct. Ventral rays 3 to 8.

Species few, small fishes from shallow waters and littoral in cool seas. The first dorsal especially distinctive, broken into a number of fine filamentous rays, united by fin membrane only basally, the last hidden in deep groove in dorsal margin. As the European species are frequently found in rock pools they have been called "rocklings."

Gaidropsarus capensis (Kaup)

Motella capensis KAUP, Archiv Naturg., vol. 24, pt. 1, p.

90, pl. 13, fig. 3, 1858 (type locality: locality?

[= Cape of Good Hope])).

Gaidropsarus capensis THOMPSON, Marine Biol. Rep. South

Africa, no. 3, p. 108, 1916 (South Africa). --BARNARD,

Ann. South African Mus., vol. 21, pt. 1, p. 323, June

1925 (Kalk Bay; Algoa Bay; 25 fathoms).

Gaidropsarus novae-zelandiae (Hector)

Motella novae-zelandiae HUTTON, Trans. New Zealand Inst.,

vol. 6, p. 107, pl. 18, fig. 76 b, 1874 (type locality:

Cape Campbell).

Gaidropsarus novae-zealandiae WAITE, Rec. Canterbury Mus.,

vol. 1, no. 1, p. 18, April 25, 1907 (reference).

Gaidropsarus pacificus (Schlegel)

Motella pacifica SCHLEGEL, Fauna Japonica, Poiss., pts. 10-14,

p. 249, 1846 (type locality: Japan). --KAUP, Archiv Naturg.,

vol. 24, pt. 1, p. 90, 1858 (reference). --GUNTHER, Cat.

Fishes Brit. Mus., vol. 4, p. 367, 1862 (copied). --BLEEKER,

Nederland Tijds. Dierk., vol. 4, p. 130, 1873 (1874) (reference).

Onos pacificus GOODE and BEAN, Oceanic Ichth., p. 381, 1895

(name).

Gaidropsarus pacificus JORDAN and SNYDER, Ann. Zool. Japon.,

vol. 3, p. 119, 1901 (Nagasaki).

Family Merlucciidae

Body moderately long, terete. Caudal peduncle distinct. Head long, depressed, pike like. Mouth terminal. Jaws and vomer furnished with strong teeth. No barbels at chin. Suborbitals moderate. Gill membranes not united. No pseudobranchiae. Branchiostegals 7. Single pyloric appendage. Scales small, deciduous. Dorsals 2, anterior short and posterior long. Anal single, long, like second dorsal. Second dorsal and anal more or less incised at margin behind middle, sometimes so deeply fins may appear divided. Caudal truncate or forked, rays procurrent forward on caudal peduncle. Ventrals subjugular.

Fishes of the northern and southern hemispheres, ranging into deep water in the warmer seas of their distribution. They differ from the Gadidae chiefly in structural characters of the skull and the absence of a mandibular barbel.

Genus Merluccius Rafinesque

Merluccius RAFINESQUE, Car. Nuov. Anim. Sicil., p. 26, 1810.

(Type Merluccius smiridus RAFINESQUE = Gadus merluccius

LINNAEUS, monotypic.)

Merlucius GILL, Proc. Acad. Nat. Sci. Philadelphia, 1863,

p. 244. (Type Gadus merluccius LINNAEUS.)

Onus RAFINESQUE, Indice Ittiol. Sicil., p. 12, 1810.

(Type Onus riali RAFINESQUE = Gadus merluccius LINNAEUS,
virtually. Onus RAFINESQUE proposed to replace Merluccius
RAFINESQUE.)

Merlangus RAFINESQUE, Indice Ittiol. Sicil., p. 67, 1810.

(Type Onus riali RAFINESQUE, virtually. Merlangus RAFINESQUE
proposed to replace Onus RAFINESQUE.)

Stomodon MITCHILL, Rep. Fishes New York, p. 7, 1814. (Type

Stomodon bilinearis MITCHILL, monotypic.)

Hydronus MINDING, Nat. Fische., p. 83, 1832. (Type Gadus

merluccius LINNAEUS, monotypic.)

Merlus GUICHENOT, Hist. Nat. Chile, Gay, vol. 2, p. 328, 1847.

(Type Merlus gayi GUICHENOT, monotypic.)

Homalopomus GIRARD, Proc. Acad. Nat. Sci. Philadelphia, 1856,

p. 133. (Type Homalopomus trowbridgii GIRARD, monotypic.)

Epicopus GÜNTHER, Cat. Fishes Brit. Mus., vol. 2, p. 248, 1860.

(Type Merlus gayi GUICHENOT, virtually. Epicopus GÜNTHER
proposed to replace Merlus GUICHENOT.)

Head slender, conic. Snout long, depressed. Eye rather large. Mouth large, oblique, lower jaw protruding. Maxillary extends to eye. Teeth slender, variable, in about 2 series, inner row longer and movable. Vomerine teeth similar. Palatines toothless. Preopercle with channel behind crest, crossed by short radiating ridges; preopercle edge free. Well defined oblong triangular excavation at forehead, bounded by ridges on separated frontals converging backward with low occipital crest. Gill rakers long. Dorsals well separated, second with deep emargination. Anal similar. Ventrals well developed, rays 7.

Large voracious fishes, with soft flesh, some ranging into deep water.

Merluccius gayi (Guichenot)

Merlus gayi GUICHENOT, Hist. Nat. Chile, Gay, vol. 2, p. 329,

pl. 8, fig. 2, 1847 (type locality: Valparaiso).

Merluccius gayi GÜNTHER, Cat. Fishes Brit. Mus., vol. 4, p. 346,

1862 (compiled). --STEINDACHNER, Zool. Jahrb., Suppl. Band 4,

p. 325, 1898 (Tumbes; Talcahuano). --DELFIN, Cat. Pesc. Chile,

p. 100, 1901 (compiled); Revist. Chile. Hist. Nat., vol. 7,

nos. 5-6, p. 269, fig. 7, 1903. --WAITE, Rec. Canterbury Mus.,

vol. 1, no. 1, p. 18, April 25, 1907 (reference). --EVERMANN

and RADCLIFFE, Bull. U. S. Nat. Mus., no. 95, p. 156, 1917

(Callao; Paita).

Gadus productus (not AYRES) KNER, Reise Novara, Fische,
p. 278, 1865 (Valparaiso).

Gadus australis HUTTON, Fishes New Zealand, p. 45, 1872 (type
locality; Cook Straits). --HECTOR, Edible Fishes of New
Zealand, p. , pl. 7, fig. 72, 1872 (Bruce Bay); Handbook
New Zealand, p. 16, 1879.

Merluccius productus (Ayres)
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Merlangus productus AYRES, Proc. Cal. Acad. Sci., vol. 1, p.  
64, 1855 (type locality: markets, our coasts, Oregon and  
Washington). --BLEEKER, Nederland Tijds. Dierk., vol. 4, p.  
130, 1873 (1874) (reference to China ?).

Gadus productus GÜNTHER, Cat. Fishes Brit. Mus., vol. 4, p. 338,  
1862 (compiled).

Merlucius productus GILL, Proc. Acad. Nat. Sci. Philadelphia,  
1863, p. 247 (compiled). --JORDAN and GILBERT, Bull. U. S. Nat.  
Mus., no. 16, p. 809, 1882 (compiled).



Merluccius productus JORDAN and EVERMANN, Bull. U. S. Nat.

Mus., no. 47, pt. 3, p. 2531, 1898 (Puget Sound; Santa

Catalina). --EVERMANN and GOLDSBOROUGH, Bull. Bur. Fisher.,

vol. 26, p. 345, fig. 125, 1906 (1907). (Seattle, Washington).

--FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1923, p. 281

(Victoria, B. C. ), p. 287 (San Pedro, Cal.), p. 296 (La

Jolla, Cal.). --CHU, Biol. Bull. St. John's Univ., no. 1, p.

89, Jan. 1931 (compiled).

Homalopomus trowbridgii GIRARD, Proc. Acad. Nat. Sci. Philadelphia,

vol. 8, p. 132, 1856 (type locality: Astoria, Oregon Territory);

U. S. Pac. R. R. Ex., Fishes, p. 144, pl. 40a, figs. 1-4,

1858 (type).